Serial No.: 10/085,230 Filed: 02/27/2002
Amendment dated: 10/15/2003
Reply to Office Action of: 08/14/2003
Atty. Docket No.: GJH-0204 (P2001J047)

REMARKS

Claim 1 has been amended to include the limitation that the Group VIII metal contained on the M41S support is a noble metal selected from Pt, Pd, Ir, and mixtures thereof. Support for this amendment can be found in original Claim 2, now cancelled, and paragraphs [0014] and [0023] of the instant specification. Claim 1 has also been amended to place the letter "a" in front of the phrase "bound M41S support" to correct an apparent grammatical error.

Claim 2 has been deleted because the majority of its contents have been incorporated into Claim 1.

Claim 3 has been amended to depend from Claim 1 because Claim 2 has been cancelled and Claim 3, as filed, depended from Claim 2.

Claim 6 has been amended to delete the word "noble" and replace it with "Group VIII noble" and include the limitation that the amount of Group VIII metal is from about 0.01 to 5 wt.%. Support for this amendment can be found in paragraph [0026] of the instant specification. Claim 6 has also been amended to correctly reflect that the Group VIII metal concentration referred to therein is that of the catalyst in the second reaction stage. Support for this amendment can again be found in paragraph [0026] of the instant specification. No new matter has been added.

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Claim 11 has been amended by inserting the word "catalysts" after "mesoporous". Support for this amendment can be found in Paragraph [0022] and Claim 12 of the instant specification. No new matter has been added.

CLAIM OBJECTIONS

Claim 11 has been objected to.

EXAMINER'S POSITION

The Examiner takes the position that a word or words is missing after the word "mesoporous" of claim 11.

APPLICANTS' POSITION

Claim 11 has been amended by inserting the word "catalysts" after "mesoporous". Support for this amendment can be found in Paragraph [0022] and Claim 12 of the instant specification.

The Examiner is requested to withdraw this objection.

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CLAIM REJECTIONS

REJECTIONS UNDER 35 U.S.C. 112(SECOND PARAGRAPH)

Claims 2, 3,6, and 12 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

EXAMINER'S POSITION

The Examiner takes the position that Claims 2 and 3 are indefinite because the expression "the Group VIII noble metal" lacks proper antecedent basis in Claim 1.

The Examiner takes the position that Claim 6 is indefinite because the expression "the concentration of noble metal" lacks proper antecedent basis in Claim 1.

The Examiner takes the position that Claim 12 is indefinite because the expression "the mesoporous catalyst" lacks proper antecedent basis in Claim 11.

APPLICANTS' POSITION

Claim 2 has been cancelled.

Claim 3 has been amended to depend from Claim 1. Claim 1 includes the limitations that the Group VIII metal of the M41S supported catalyst is a Group VIII

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noble metal selected from Pt, Pd, Ir, and mixtures thereof. Thus, applicant takes the position that the amendment to Claim 1 in conjunction with the amendment to Claim 3 provides antecedent basis for the phrase "the concentration of noble metal" as it appears in Claim 3.

Claim 6 has been amended to delete the word "noble" and replace it with "Group VII". Claim 6 has also been amended to correctly reflect that the Group VIII metal concentration referred to therein is that of the catalyst in the second reaction stage. Applicants take the position that this amendment corrects the lack of antecedent basis for 6.

Claim 11 has been amended by inserting the word "catalysts" after "mesoporous". Applicants take the position that this amendment corrects the lack of antecedent basis for 12.

The Examiner is requested to reconsider and withdraw these rejections.

REJECTION UNDER 35 U.S.C. 103

Claims 1-14 have been rejected under 35 U.S.C. 103(a) as being obvious in light of United States Patent Number 6,187,176, Hantzer et al. ("Hantzer") in view of United States Patent Number 5,344,553, Shih et al. ("Shih").

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EXAMINER'S POSITION

The Examiner takes the position that Hantzer discloses a process for the production of a white oil. The Examiner states that the process comprises hydrotreating in the presence of hydrogen treat gas a mineral oil stock, equivalent to that which is presently claimed, in a first reaction stage that contains a hydrotreating catalyst. The first reaction stage is operated under hydrotreating conditions that result in the feedstock being at least partially hydrogenated and desulfurized. The reaction product of the first reaction stage is hydrotreated in a second reaction stage in the presence of (i) a hydrodesulfurization catalyst comprising a Group VIII metal on an inorganic support, (ii) hydrogen containing treat gas, and (iii) a hydrogen sulfide sorbent material. The Examiner also lists the second stage reaction conditions. The product from the second reaction stage is hydrogenated in a third reaction stage in the presence of a Ni based catalyst, thereby producing a white oil.

The Examiner notes that Hantzer does not disclose a M41S support material for the hydrodesulfurization catalyst. However, the Examiner cites Shih as providing an M41S supported catalyst that is effective for hydrodesulfurization. Thus, the Examiner takes the position that it would have been obvious to combine the teachings of Shih with those of Hantzer to obviate the M41S supported hydrodesulfurization catalyst of the instant invention.

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The Examiner also notes that it would have been obvious to modify the teachings of Hantzer to separate the sorbent stage of Hantzer.

APPLICANTS' POSITION

It is applicants' position that one having ordinary skill in the art and knowledge of Hantzer and Shih at the time the invention was made would not have found it obvious to arrive at the presently claimed invention.

The present process is a 4 stage catalytic process to produce pharmaceutical grade white oils. The process comprises hydrotreating a mineral oil feedstock in a first stage to produce a first stage reaction product. The first stage reaction product is then hydrotreated again in a second reaction stage in the presence of a hydrodesulfurization catalyst comprising a Group VIII noble metal selected from Pt, Pd, Ir, and mixtures thereof on a M41S support to produce a hydrotreated product that is treated with a sulfur sorbent material in a third reactions stage. The reaction product of the third reaction stage is subsequently hydrogenated in a fourth reaction stage. The hydrotreating catalyst support of the second stage is a mesoporous material. See paragraph [0022] of the instant specification. This mesoporous material belonging to the M41S class of materials is bound with a suitable binder such as those described in paragraph [0024] of the instant specification.

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Hantzer involves a process wherein a hydrocarbon feedstock is hydrotreated in a first reaction stage to produce a first reaction stage product. The first stage reaction product is then hydrotreated again in a second reaction stage in the presence of a hydrodesulfurization catalyst and a sulfur sorbent material. The reaction product of the second reaction stage is subsequently hydrogenated in a third reaction stage.

However, as the Examiner points out, the instant process differs from that of Hantzer in that Hantzer does not disclose that an M41S support, a mesoporous support, can be utilized. Therefore, the Examiner has cited Shih to provide support for including M41S support materials in Hantzer.

Applicants concede that Shih teaches a hydrocarbon upgrading process of resids with an MCM-41 based catalyst, see Shih col. 17, lines 42-44. Applicants also concede that the MCM-41 based catalyst can contain a Group VIII metal, see Shih col. 18, lines 11-13. However, Shih teaches away from the use of Group VIII noble metals on the MCM-41 based catalyst used therein. See Shih, col. 18, lines 16-35. As stated at column 18, lines 16-26, "The metals of Group VIII commonly known as the 'noble' metals (e.g., palladium and platinum) are more expensive and more readily subject to poisoning than are iron, nickel and cobalt. ... Although noble metals may, in theory, be useful in the present catalyst system, it is currently believed that in practical applications envisioned,

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the overall effectiveness of catalyst systems containing non-noble metals will be much greater." Shih continues at col. 18, lines 31-35 "Accordingly, the following descriptions relating to the metals content and, more specifically, the Group VIII metals content of the present catalyst system, is oriented towards the use of non-noble metals from Group VIII."

Thus, applicants take the position that the combination of Hantzer and Shih does not obviate the instantly claimed invention. As stated above, the instantly claimed invention utilizes a hydrodesulfurization catalyst comprised of a Group VIII noble metal selected from Pt, Pd, Ir, and mixtures thereof on a bound M41S support. Shih discloses the use of non-noble metal containing Group VIII MCM-41 catalysts, and Shih teaches away from the use of noble metal containing MCM-41 catalysts, see Shih col. 18, lines 11-13 and lines 31-35. Thus, the combination of Shih and Hantzer would not teach one having ordinary skill in the art to utilize a M41S noble metal containing catalyst in the second reaction stage of Hantzer but would teach away from using a noble metal containing M41S catalyst.

Therefore the Examiner is requested to reconsider and withdraw this rejection.

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Based on the preceding arguments and amendments, the Examiner is requested to reconsider and withdraw all objections and rejections and pass this application to allowance. The Examiner is encouraged to contact applicants' attorney should the Examiner wish to discuss this application further.

Respectfully submitted:

Date: 10/15/03

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